Particle Swarm Optimization For Multimachine Power Systemstabilizer Design

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Summary

In this paper, a novel evolutionary algorithm based approach to optimal design of multimachine power system stabilizers (PSSs) is proposed. The proposed approach develops and employs particle swarm optimization (PSO) technique to search for optimal settings of PSS parameters. Two eigenvalue-based objective functions to enhance system damping of electromechanical modes are considered. The robustness of the proposed approach to the initial guess is demonstrated. The performance of the proposed PSO based PSS (PSOPSS) under different disturbances and loading conditions is tested and examined. Eigenvalue analysis and nonlinear simulation results show the effectiveness of the proposed PSOPSSs to damp out the electromechanical oscillations and work effectively over a wide range of loading conditions